

REMARKS

The Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and the reasons that follow.

I. Status of the Claims

Claims 5, 7-12, and 16-18 are amended for minor editorial changes. Claim 4 is amended to recite that the polyol is bifunctional. Support for the amendment can be found in, *inter alia*, claim 3 as originally filed. Claim 6 is amended to recite that the polyol is bifunctional and to recite the specific temperatures in the impregnating and curing steps. Support for the amendments can be found in, *inter alia*, original claim 3 and paragraphs [0047]-[0048] in the Specification as-published. No new matter is introduced, and claims 4-12, and 16-18 are currently pending to be examined on their merits.

II. Claim Rejection – 35 U.S.C. § 112

Claims 5, 7-12, and 16-18 are rejected under 35 U.S.C. § 112, ¶2, as allegedly being indefinite. At least in view of the foregoing amendments, the Applicants respectfully submit that the rejection should now be moot.

III. Claim Rejection – 35 U.S.C. § 102

Claims 4, 6, 11, and 16-18 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by US 5,071,613 (“Fukami”). The Applicants respectfully traverse the rejection.

While not acquiescing to the grounds of the rejection, independent claims 4 and 6 are amended to recite that the polyol is “bifunctional.” Nowhere does Fukami teach using a bifunctional polyol. Because Fukami does not teach each and every element in independent claims 4 and 6, Fukami’s teaching cannot anticipate claims 4 and 6, or their corresponding dependent claims.

IV. Claim Rejection – 35 U.S.C. § 103

Claims 4, 6, 11, and 16-18 are rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Fukami. Claims 4-8, 10-12, and 17-18 are rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Fukami in view of US 5,032,622 (“Herrington”). The Applicants respectfully traverse the rejection.

(i) Current Obviousness Standard

The U.S. Supreme Court recently reaffirmed the Graham factors for determining obviousness in *KSR Int'l Co. v. Teleflex Inc.* (No. 04-1350) (U.S., April 30, 2007). The Graham factors, as outlined by the Supreme Court in *Graham et al. v. John Deere Co. of Kansas City et al.*, 383 U.S. 1 (1966), are: 1) determining the scope and contents of the prior art; 2) ascertaining the differences between the claimed invention and the prior art; 3) resolving the level of ordinary skill in the pertinent art; and 4) evaluating evidence of secondary consideration. The Supreme Court recognized that a showing of "teaching, suggestion, or motivation" to combine the prior art to meet the claimed subject matter could provide a helpful insight in determining whether the claimed subject matter is obvious under 35 U.S.C. § 103(a) and held that the proper inquiry for determining obviousness is whether the improvement is more than the predictable use of prior art elements according to their established functions. The Court noted that it is "important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the [prior art] elements" in the manner claimed and specifically stated:

Often, it will be necessary . . . to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was ***an apparent reason to combine the known elements in the fashion claimed*** by the patent at issue. To facilitate review, this analysis should be made explicit.

KSR Int'l Co. v. Teleflex Inc., slip op. at 14 (emphasis added). As discussed below, the cited art cannot render the claimed invention obvious.

(ii) Fukami and Herrington

As explained in the previous section, Fukami does not teach or suggest using a bifunctional polyol, as recited in independent claims 4 and 6. Specifically, nowhere does Fukami teach or suggest using a bifunctional polyol such as polypropylene glycol, as recited in claims 7 and 10. Particularly, in Table 2 of Fukami, formulations of Examples 2 and 4 have a NCO/OH equivalent ratio of 1.05 and 1.10, respectively, but these formulations do not include any bifunctional polyol at the claimed molar ratio. As provided in paragraph [0087] of EP 1 803 756 (Exhibit A), a polyol compound mainly used in Examples 2 and 4 is SANNIX GP400, which is trifunctional polyether polyol. Accordingly, the polyurethane formulations of Fukami are different from the presently claimed invention, which involves a bifunctional polyol. In fact, the formulations of Fukami do not have the shape-memory property as recited in the present claims.

Fukami discloses a method for producing polyurethane type composite, but Fukami does not at all teach or suggest a polyurethane, or production thereof, that is a shape-memory polymer, as recited in present independent claims 4 and 6. The Applicants respectfully submit that one of ordinary skill in the art would not reach the presently claimed shape memory polymer having the claimed glass transition point based on Fukami's teaching. Specifically, Fukami does not at all teach or suggest the combination of the presently claimed isocyanate and polyol at the presently claimed molar ratio (in terms of isocyanate and polyol functional groups), without a chain extender. In particular, should a bifunctional polyol not be used, the resulting polyurethane would not have shape-memory properties, because a trifunctional polyol or polyfunctional polyol having 4 or more functional groups would result in cross-linking with isocyanate so strong as to form a polyurethane product having rigid networks of polymer chains. Such product with rigid networks would not change the shape of the product around a glass transition point. *See* paragraph [0036] of in the present Specification as-published.

Herrington does not remedy the above deficiencies. Herrington relates to a densifiable and re-expandable polyurethane foam, which differs from a polyurethane type composite of Fukami, which is excellent in high rigidity impact resistance and heat resistance (*see* col. 1, lines

10-13 of Fukami). Thus, one of ordinary skill in the art would not have a reason to combine the teachings of Fukami and Herrington. Additionally, one of ordinary skill in the art would not have a reason to modify a Tg of polyurethane of Fukami to reach the present invention because a polyurethane product disclosed in Fukami does not have a shape-memory property. Specifically, the shape of the polyurethane of Fukami would not change its shape at its Tg. Accordingly, one of ordinary skill in the art would not have a reason to combine the teaching of Fukami with that of Herrington. *See KSR.*

At least in view of the foregoing, the present claims are non-obvious over the teachings of Fukami and Herrington, alone or in combination. Therefore, the Applicants respectfully request that the rejection be withdrawn.

V. Claim Rejections – Double-Patenting

Claims 4-5, 10-11, and 17 are provisionally rejected on the ground of nonstatutory double-patenting as allegedly being unpatentable over claims 2, 44, 47, 49, and 50 of co-pending application No. 10/807,737. Claims 4-12, and 17-18 are provisionally rejected on the ground of nonstatutory double-patenting as allegedly being unpatentable over claims 1-8 of co-pending application No. 10/492,940. The Applicants respectfully submit herewith two terminal disclaimers directed to the co-pending applications. At least in view of the terminal disclaimers, the Applicants respectfully request that the rejections be withdrawn.

CONCLUSION

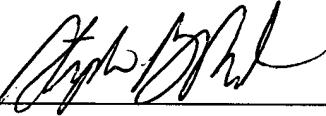
The Applicants believe that the present application is now in condition for allowance and thus respectfully request favorable reconsideration of the application.

The Office is invited to contact the undersigned by telephone if a telephone interview would advance the prosecution of the present application.

The Office is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, the Applicants hereby petition for such extension under 37 C.F.R. § 1.136 and authorize payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date Aug. 21, 2009

By 

FOLEY & LARDNER LLP
Customer Number: 22428
Telephone: (202) 672-5569
Facsimile: (202) 672-5399

Stephen B. Maebius
Attorney for the Applicants
Registration No. 35,264